From LGA PSP: The work plan must be consistent with and support the budget and schedule. The level of detail must be sufficient for the work plan to function as the scope of work for the agreement and to allow reviewers to understand the level of effort of the work being performed as to further substantiate the cost estimates in the budget. If the applicant does not have an existing GWMP, then it should use this section to detail the process by which one will be created. The work plan should include, at a minimum, the following items:

- Scope of the proposed project including (as appropriate) maps of agency area and area of proposed tasks;
- Specific purpose, goals, and objectives of the proposed project related to improving groundwater management and implementing the GWMP and/or where applicable the IRWM Plan;
- Work items to be performed under each task of the proposed tasks (consistent with the budget and schedule);
- Present a sound strategy for evaluating progress and performance at each step of the proposed project.
- Project deliverables for assessing progress and accomplishments, which include quarterly progress and final reports.
- If access to private property is needed, provide assurance that access can be granted. For example, if wells will be constructed or sampled on private land, submit a letter or agreement that demonstrates that access for well construction and monitoring on the property has been obtained.
- Explain the plan for environmental compliance and permitting, including a discussion of the following items: a description of the plan, proposed efforts, and approach to environmental compliance, including addressing any CEQA obligations in connection with the proposal; a listing environmental related permits or entitlements that are needed for the project; and any other applicable permits that will be required. Briefly describe the process and schedule for securing each permit/approval. Discuss necessary local drilling permits and the submittal of Well Completion Reports to DWR. Describe the proposed process for securing each environmental permit and any other regulatory agency approval.

Work Plan

The following is the Work Plan for the Phase 1: Stanislaus River Reconnaissance-level Conjunctive Use Evaluation project as described below.

Project Purpose, Goals and Objectives:

As described in Attachment 4 – Project Description, this project is being conducted by Calaveras County Water District (CCWD) with support from Oakdale Irrigation District (OID) to evaluate the potential feasibility of conjunctive use in the Stanislaus River watershed by:

- estimating upstream surface water availability from CCWD both seasonally and under a range of hydrologic conditions given both existing and future municipal/industrial and agricultural demands within CCWD,
- assessing groundwater recharge and storage opportunities within the existing OID Sphere of Influence, which overlies portions of the Modesto and Eastern San Joaquin groundwater subbasins, and
- using the above information to evaluate the feasibility of conjunctively managing surface water and groundwater resources to the benefit of the Stanislaus River watershed.

The potential benefits to CCWD and OID will include increased reliability of water supply within the watershed and adjacent groundwater basins as a whole and identification of the potential for further development of agricultural, municipal and industrial water uses and associated economic development in both the upper and lower Stanislaus River watershed and adjacent groundwater basins, while sustaining environmental and hydropower needs. A letter of support from OID is attached demonstrating their commitment to this project.

Scope of Work
The work plan to establish the feasibility of conjunctive use includes the following individual tasks, each of which is detailed further below.

Task 1 - Collect and Review Baseline Information
Task 2 - Stakeholder Outreach
Task 3 - Evaluate Water Supply Availability
Task 4 - High-Level Screening of Conjunctive Use Opportunities within OID
Task 5 - Focused Analysis of Specific Conjunctive Use Areas
Task 6 - Identification and Evaluation of Infrastructure for Conjunctive Use
Task 7 - Prepare Draft/Final Report
Task 8 - Project Management and Quality Assurance/Quality Control

This project does not require access to private property therefore no assurance for property access are provided. In addition, this project is a planning-level feasibility study and does not include construction of facilities or provide discretionary approval, therefore there are no California Environmental Quality Act (CEQA) approvals or permits required.

Task 1: Collect and Review Baseline Information
Background and Task Goal: A number of broad range studies and information exist in the study area (shown on Figure 5-1), which includes both the Stanislaus River portion of the CCWD service area as well as the OID Sphere of Influence as detailed on Figures 5-2 and 5-3, respectively. The goal of this task is to collect available information through interviews, as well as research of technical data and documents to support Tasks 3, 4 and 5 and to conduct a high-level review of the information that is collected. The specific subtasks are described below.

Interviews: Interviews will be conducted with CCWD, OID, and other Modesto and Eastern San Joaquin Groundwater Sub-basin representative(s) including members of the Stanislaus and Tuolumne River Groundwater Basin Association (Association) members. The interviews will document available studies and data, current operations of hydropower systems and water delivery systems that could impact surface water availability, existing conditions in the groundwater basin and influences (e.g., variability in surface water flows and deliveries, groundwater storage and levels, water demands, water quality, etc.), and updates to the activities of the Integrated Groundwater Management Plan (IGWMP such) as the data contained in the Data Management System from the 2007 OID/MID Wellfield Optimization Study that could provide additional information.

Research and Review of Baseline Information: Previous studies of both the surface water and groundwater will be utilized to develop an understanding of conjunctive use opportunities. For surface water, CCWD's consultant ECORPS, Incorporated has gathered and retained surface water stream gage and reservoir water level data from USGS and DWR as part of their prior modeling work. ECORPS will be using these data for completion of Task 3.

For Tasks 4 and 5, which are the groundwater portions of the study, the following reports comprise the technical studies that are readily available through OID and on-line sources (e.g., the Association web site for the study area). These reports will be reviewed for information that are integral components of the hydrogeologic conceptual model. This information includes the occurrence and movement of groundwater, hydrogeologic budget including estimates of basin recharge and discharge, aquifer geometry and hydraulic characteristics, and hydrogeologic stresses. CCWD's hydrogeologic consultant, Kennedy/Jenks Consultants (Kennedy/Jenks) has also acquired the USGS MODFLOW model that will be valuable for evaluation of areas that are within the model domain. The reports to be reviewed include:

- GEI/Bookman-Edmonston, 2007. Well Field Optimization Project.
- Phillips, S.P., Burow, K.R., Rewis, D.L., Shelton, J.L., and Jurgens, B., 2007a. Hydrogeologic Setting and Ground Water Flow Simulations of the San Joaquin Valley Regional Study Area, California. In Hydrogeologic Settings and Ground-Water Flow Simulations for Regional Studies of the Transport of Anthropogenic and Natural Contaminants to Public-Supply Wells—Studies Begun in 2001, edited by S.S. Paschke. U.S. Geological Survey Professional Paper 1737A, 31 p.
- Stanislaus Tuolumne River Groundwater Basin Association, 2005. Integrated Regional Groundwater Management Plan.
- WRIME, 2007. Recharge Characterization for Stanislaus and Tuolumne Rivers Groundwater Basin Association. Prepared for the Stanislaus and Tuolumne Rivers Groundwater Basin Association by WRIME, Inc. Memorandum dated 7 May 2007.

In addition, to support more detailed hydrogeological analysis of specific conjunctive use areas, data describing the geological and hydrogeological setting will be obtained, including:

- Existing soils, geological, and hydrogeological reports, maps, and geologic cross-sections. Much of these are likely available in the documents cited above or electronically available through sources such as DWR, Natural Resource Conservation Service, and USGS.
- Data sets include groundwater elevations, aquifer tests, geologic logs, geophysical logs, stream gauges, precipitation, evapotranspiration, crop distribution, well locations, and well pumping records that will further support development of conceptual and numerical/analytical models, particularly in areas that are not within the MODFLOW model domain. These data will be obtained from Kennedy/Jenks libraries and/or sources such as the above-mentioned reports, California Irrigation Management Information System (CIMIS), OID staff, the MID Data Management System and staff, DWR staff, and Agricultural Commissioner and Farm Bureau staff.
- Electronic base maps for the study area with features such as boundaries, waterways, OID infrastructure, and roads in appropriate coordinate system such as AutoCAD or ArcView are either in the Kennedy/Jenks data library or will be obtained from sources mentioned earlier.

Deliverable: Once the available baseline information is collected and reviewed, a draft report section documenting the information and their sources for Task 1 will be prepared and provided electronically for review.

Task 2: Stakeholder Outreach

Background and Goal of Task: Outreach to both the upstream stakeholders within the CCWD service area as well as the stakeholders overlying the groundwater basin will be valuable to disseminate and acquire technical information as well as to convey results. Some limited stakeholder outreach has already been initiated for this task in both the upper watershed as well as in the overlying groundwater basin. This task will supplement and expand those initial efforts. The goal of this task is to inform stakeholders of the entire watershed of potential opportunities for Stanislaus River conjunctive water management for agricultural and municipal/industrial water benefit; obtain input on technical information to better inform the stakeholders; and build public support. This task will be accomplished primarily through development and distribution of outreach materials and stakeholder outreach meetings as described below.

Prepare outreach materials: In coordination with Task 1, a 1-page fact sheet will be prepared describing the goals and geographic scope of this study and potential outcomes and benefits of conjunctive operation of the Stanislaus River between the upstream and downstream watershed areas. The fact sheet will be used to discuss the project with both upstream and downstream stakeholders. As the project progresses, presentation materials will be prepared for the stakeholder briefings discussed below.

Stakeholder Updates: Both formal and informal briefings will be made at key milestones of the project with which are likely to include: 1) project kick-off to convey project goals as well as to obtain technical information; 2) at project mid-point when supply availability and conjunctive use screening has been completed; and 3) at project wrap-up when the specific project conjunctive use locations have been evaluated. The briefings with the upstream watershed stakeholders will be made by CCWD staff, and a local CCWD consultant, John Mills, who have individual relationships with stakeholders, with the support of the consultant staff. The briefings with the downstream watershed stakeholders, which include the Association and other interested parties, will be led by the consultant staff with the support of OID staff. DWR staff and adjacent Integrated Regional Water Management (IRWM) Groups such as Tuolumne-Stanislaus IRWM will be notified of these briefings so that interested parties can attend.

Deliverable: The information and comments received during these briefings will be documented in a draft report section documenting Task 2 (See Task 7) including meeting agendas and summaries. An electronic copy will be provided for review.

Task 3: Evaluate Water Supply Availability for the Program

Background and Task Goal: CCWD's surface water draws from the North Fork of the Stanislaus River and is used for hydropower generation; CCWD contracts with the Northern California Power Agency (NCPA) to operate and maintain CCWD's hydropower generation facilities. Therefore, this analysis will build on existing analyses of surface water availability that CCWD has previously commissioned for hydropower generation. The water availability for potential recharge will be evaluated by simulating

North Fork Stanislaus Project (Project) hydropower operations using the North Fork Stanislaus Simulation model developed for CCWD. This model was recently updated with cooperation from the NCPA to evaluate the water supply and hydropower generation impacts of the proposed Delta Flow Criteria. This same model will be used to evaluate the measures necessary to make surface water available for groundwater recharge in the Lower Stanislaus River watershed. The model, as it currently exists, uses unimpaired hydrology from water year 1970 to water year 2008 and all the existing facilities, permits, licenses and agreements which together influence the seasonal and normal, wet, and dry year availability of water for conjunctive use. Stanislaus River water is stored in New Melones Reservoir, a US Bureau of Reclamation facility, and Lake Tulloch prior to release to OID.

One element of this task is to develop unimpaired flow estimates for the hydrology from 1922 to 1969. This will allow the analysis to include additional critical dry periods from 1928 – 1934 and in the early 1960s for a more robust evaluation of water supply availability. Another element of this task is to apply the unimpaired flow estimates from 1922 to 1969 to the Project operations model to provide a monthly estimate of water supply availability using the hydrology for the period from 1922- 2008. The final element of this task is an iterative analysis with the groundwater recharge analysis in Task 5, which will simulate the recharge of surface water. The magnitude of groundwater recharge will then be used in a CALSIM II simulation, which will provide an initial, high-level estimate of the impact of groundwater recharge for conjunctive use potential to New Melones Reservoir operations.

Preparation of Unimpaired Flow Estimates for 1922 – 1969: Prior studies developed unimpaired flow estimates from 1970 – 2008. This task is for the development of estimates for unimpaired flow on N. Fork for 1922-1969 to include several other dry periods; extension of the study period facilitates understanding under a broader range of dry conditions, which could be indicative of future conditions under climate change. This task includes identifying and evaluating a range of data sources that could be used to develop unimpaired flow estimates. A primary data source is gage data both in the upper and lower Stanislaus River watersheds. However, if the gage location and/or time period of record does not align well with the needs of the analyses, these gage data will be used in conjunction with precipitation data, watershed tributary area, elevation and a number of correlation factors to create a simulation of unimpaired flow appropriate to estimate flow for the purposes of conducting operations modeling of the Project on a monthly basis for the feasibility analysis.

Operations Model Update and Water Supply Availability Analysis: The North Fork Stanislaus Project is primarily operated to minimize spill and maximize power generation during the highest power price periods in the year. Currently, consumptive water demands total about 3,500 AF, annually. Typical of a west slope Sierra project, runoff is captured in the 189,000 AF New Spicer Meadow Reservoir during the winter and spring runoff period. Storage withdrawals for power generation usually begin in June or July and continue until the following fall or winter. Once water passes through the Project, it becomes available to downstream users. The pattern in which water passes through the project and could be available will likely reflect patterns consistent with power load or price, especially in the low flow summer and early fall months.

The proposed modeling will include a simulation of the current operations, including the operations of the three individual storage accounts associated with NCPA's customers who are shareholders of the Project. Each of these shareholders has different operating goals, and therefore different operating rules within New Spicer Meadow Reservoir. Future analyses, not in the scope of this project, could include operating alternatives that add various conjunctive use water delivery volumes and/or various New Spicer Meadows Reservoir carryover targets.

New Melones Reservoir Operations Evaluation: The use of surface water in the OID Sphere of Influence for conjunctive use has the potential to affect New Melones Reservoir release patterns. As a result, it is prudent to model the New Melones Reservoir operations with CALSIM II, the State Water Project/Central Valley Project model developed jointly by the California Department of Water Resources and the United States Bureau of Reclamation. CALSIM II uses monthly hydrology from 1922 through 2003. This period includes several critical dry periods including 1928-1934, 1976-1977, and 1987-1992. These critical periods are used to develop operational policy and potential impacts will be studied. Extending the hydrology for the Upper Stanislaus also will be used to match the CALSIM II hydrology. As discussed earlier, the New Melones Reservoir operations has the potential to be modified with the potential groundwater recharge quantities developed in Tasks 4 and 5.

Summary of Task 3 elements:

- North Fork Stanislaus Project unimpaired runoff estimate from 1922-1969
- North Fork Stanislaus Project modeling from 1922-2003 utilizing current operating rules
- Determination of CCWD water availability based on simulation modeling
- CALSIM II New Melones Reservoir operations evaluation

Deliverable: The initial results of this task will first be presented to OID and CCWD, then, when refined, to the broader stakeholders such as the Association. Then, a draft report section documenting the unimpaired runoff estimates from 1922 - 1969, Project modeling results using the additional unimpaired runoff estimates, resulting water supply availability analysis, and New Melones Reservoir operations evaluation will be prepared electronically for review.

Task 4 – High-Level Screening of Conjunctive Use Opportunities

Background and Task Goal: Prior work has been conducted by the Association that provided an initial screening of potential direct recharge areas in the area overlying the Modesto Groundwater Sub-basin, portions of the Eastern San Joaquin Groundwater Sub-basin, the Stanislaus County portion of the Turlock Groundwater Sub-basin, and portions of the Delta-Mendota Groundwater Sub-basin. The goal of this task is to focus on the potential conjunctive use opportunities within the existing OID Sphere of Influence (as shown on Figure 5-3), which overlies portions of the Modesto and Eastern San Joaquin Groundwater Sub-basins. As a screening effort, the time scale of both demands and supplies will be developed on an annual scale. Screening of both in-lieu conjunctive use as well as direct recharge areas will be conducted as described in the narrative that follows. It should be noted that in this analysis, the scale of in-lieu conjunctive use activities may be more localized, in that its feasibility will be dependent more on the infrastructure in the immediate area of the demands while direct recharge may represent a

greater opportunity whereby a larger volume of both recharge and extraction could be developed based on the characteristics of the specific location.

In-lieu Conjunctive Use Screening: In-lieu conjunctive use is practical where delivery of surface water can reduce or eliminate groundwater pumping during wetter hydrologic periods, allowing groundwater to be retained in storage for use during drier hydrologic periods. In order to fully realize in-lieu conjunctive use opportunities, both surface water delivery and groundwater pumping facilities are needed. There is overlap in the analyses and facilities needed for in-lieu conjunctive use and direct recharge, as discussed below. The approach to this screening is to identify and categorize the types of water delivery that exist or potentially can be developed fairly readily in the OID Sphere of Influence.

The mapping of the existing OID Sphere of Influence will overlaid with OID's existing delivery systems, and DWR land-use and OID data that indicate source of water, and grouped into the following categories:

- Areas where both surface water delivery and groundwater pumping occur (likely within the existing OID service area).
- Areas of groundwater-only without cost-effective surface-water delivery capability (i.e., areas too far from existing surface-water delivery facilities that can be served only by groundwater from existing or future wells).
- Areas with surface-water delivery capability only (i.e., areas already on surface water or within relative proximity of surface water delivery facilities and no existing wells).

The areas that are on groundwater-only or surface-water only are the potential in-lieu conjunctive use areas where either surface-water delivery or groundwater pumping may be developed. In addition, in areas where both surface water and groundwater facilities exist, conjunctive use may have the potential to be enhanced. The direct recharge screening will build on this analysis and look more closely at the particular areas where potentially higher volumes of aquifer storage and/or subsurface flow controls exist.

The feasibility of potential surface water delivery will be evaluated for areas of groundwater only without surface water delivery based on:

- Slope and soil characteristics for further agricultural development potential. Inelastic land subsidence and other characteristics that may diminish conjunctive use potential will be evaluated.
- Relative elevations of existing delivery systems and the lands to be served to evaluate gravity delivery options,
- Estimated water demand of lands relative to delivery system capacity to evaluate demand as compared to available supply from Task 3 as well as capacity to deliver the supply via existing infrastructure,
- Location, distribution, and capacity of existing wells, and
- Underlying aquifer depth and water levels to evaluate relative aquifer storage and potential for conjunctive operation.

The screening-level feasibility of potential groundwater pumping development and in-lieu conjunctive use for areas on surface-water only will be evaluated based on:

- Slope and soil characteristics for further agricultural development potential. Inelastic land subsidence and other characteristics that may diminish conjunctive use potential will be evaluated.
- Underlying aquifer depth and water levels to evaluate relative aquifer storage and potential for conjunctive operation,
- Estimated water demand of lands to evaluate demand from Task 3 compared to available aquifer storage capacity, and
- Location, distribution, and capacity of existing wells that could potentially be used for information, with regard to well spacing and potential pumping capacity for development of new groundwater pumping.

The two in-lieu conjunctive use evaluations are distinguished from each other in that in the first scenario, the focus is on potential development of surface water delivery while in the second scenario, the focus is on potential development of groundwater pumping.

Based on this in-lieu conjunctive use screening, general areas suitable for potential surface water delivery and groundwater development will be identified and documented as well as areas where potential enhancement of existing conjunctive use facilities can be developed. This initial screening overlaps with and is also foundational to the direct-recharge screening in that the aquifer storage, demand, and facility analyses can be directly applied to the direct-recharge screening.

Direct-recharge conjunctive use screening: Direct-recharge opportunities may be differentiated from in-lieu conjunctive use in that aquifer storage and recharge rates are likely larger than at in-lieu locations so that water can be more actively recharged and extracted. Using the information from the WRIME report and the in-lieu conjunctive use screening, areas with high-potential for direct recharge will be identified based on:

- Sphere of Influence development projections including areas that have been identified for potential annexation to OID. These areas include:
  - The area north of the Modesto Reservoir known as Paulsell Valley. This area is shown on Figure 5-4 and based on discussions with OID staff, may have the potential for conjunctive use which should be explored further.
  - Impoundment of Dry Creek which flows into the Modesto Reservoir
- Other areas with hydrogeologic potential such as aquifer storage capacity and soils characteristics conducive to surface recharge will be identified. Hydrogeologic potential will be compared to the water demand and proximity to surface-water delivery facilities using the results of the in-lieu conjunctive use analysis.

The results of the direct-recharge conjunctive use screening will result in a prioritized list of potential sites, three of which will be selected, in consultation with OID and CCWD, for more detailed evaluation in Task 5.

Deliverable: The initial results of this task will first be presented to OID and CCWD, then, when refined, to the broader stakeholders including the Association. Then, a draft report section documenting the in-lieu and direct recharge feasibility analysis will be prepared in electronic form for review.

Task 5 – Focused Analysis of Specific Conjunctive Use Areas

Background and Task Goal: As described in Task 4, prior large-scale recharge potential analyses have been conducted by WRIME. The WRIME analysis will then be further refined and supplemented with focused information pertaining to the OID Sphere of Influence developed in Task 4. At a reconnaissance level of detail, the goal of Task 5 is to estimate the potential volume of surface water that can physically be recharged in one or more of the potential areas identified in Task 4, using a monthly time-scale. Included in Task 5 will be an estimate of groundwater flow rates using the MODFLOW model for areas within the model domain and a spreadsheet model for other areas to enable estimation of the timeframe within which it would be desirable to recover the recharged water and to provide an estimate of potential water loss.

Hydrogeological Assessment of Recharge Capacity: Following the collection and review of hydrogeologic information in Task 1 and recharge location screening in Task 4, the proposed approach for assessing direct-recharge capacity in 3 specific locations utilizes two distinct methods of analysis: numerical modeling and water-balance modeling. The numerical model to be used is the U.S. Geological Survey's (USGS) regional MODFLOW model for groundwater flow and recharge in the San Joaquin Valley Regional Study Area (Phillips et al., 2007), which is focused on the Modesto area (referred to herein as the USGS model). We will use the calibrated steady-state model as well as the calibrated transient model when it is expected to be published in late 2012. The USGS model will be used to assess the recharge capacity of potential conjunctive use areas that are included within the existing model domain. Spreadsheet-based water-balance modeling will be used to assess recharge capacity for areas outside of the model domain.

Three conjunctive use scenarios will be developed to assess potential performance of recharge and recovery areas. Scenarios will include wet-, dry-, and average-year conditions. The information obtained from Tasks 3 and 4 will be used to develop assumptions regarding seasonal and hydrologic year type for groundwater basin operations. A groundwater-elevation threshold will be defined based on land-use and/or well-screen requirements. If at a particular location simulated groundwater elevations exceed this threshold during the simulation period, the volume and/or rate of recharge water applied will be reduced to achieve a feasible scenario.

Employing the USGS Model: The USGS model covers an area of approximately 1,200 square miles and includes most of the Modesto and Turlock groundwater basins, as well as parts of the Eastern San Joaquin, Merced, and Delta-Mendota groundwater basins. The existing OID Sphere of Influence is located along the eastern edge of the USGS model domain as shown on Figure 5-5. The steady-state version of the groundwater flow model is available, and has been obtained by Kennedy/Jenks. The transient-state version of the model will be published by the USGS by the end of 2012 (Steve Phillips, personal communication, 2012).

The regional-scale USGS model will be used by zooming in to three specific study areas identified in the Task 4 screening. The spatial resolution of the model will be refined to create a local-scale groundwater flow model. This procedure will be accomplished using the telescopic mesh refinement feature of Groundwater Vistas, which is a graphical user interface for the MODFLOW-family of models.

The three recharge areas will be defined in the local-scale groundwater flow following refinement of the spatial resolution in the model. Recharge capacity will be analyzed by using the model to simulate the various conjunctive use scenarios and assess the resulting simulated groundwater elevations relative to the defined thresholds. Recharge volumes and rates will be derived from Task 3 results and adjusted to define feasible scenarios for particular areas.

The local-scale model domain will be large enough to facilitate travel-time estimates for the recharged water. Contour maps will be produced that indicate specific time horizons, to assist with planning for recovery of the recharged water via new or existing wells.

Developing and Employing Water-Balance Modeling Outside of the USGS Model Domain: For potential conjunctive use areas outside of the USGS regional-scale model domain identified in Task 4, spreadsheet-based water-balance modeling will be performed. The general procedure for the water-balance modeling is similar to the procedure described above for employing the USGS Model. However, instead of using a numerical groundwater flow model, the water-balance model will use a Darcy's law approach to estimate groundwater elevations and flow rates.

Surficial soils maps will be used to estimate soil depth and soil hydraulic properties such as infiltration rate and capacity. Below the surface soil, hydraulic properties will be based on average hydraulic conductivities derived from nearby areas of the USGS regional-scale model. Hydraulic conductivity in the USGS model was defined to be a function of soil or sediment texture. Textural information from the soils maps and a previous recharge assessment (WRIME, 2007) will be used to guide definition of appropriate hydraulic conductivity values for the water-balance modeling of selected conjunctive use areas.

At each potential conjunctive use area, a representative one-dimensional geologic/soil column will be developed and used to estimate recharge performance on a per-unit-surface-area basis. This will allow potential recharge basins or areas of various areal extents to be evaluated using the same water-balance model.

Potential recharge volumes will be based on the results of Task 3 and recharge rates will be based on the scenarios described above for various climatic conditions. Precipitation and potential evapotranspiration values will be derived from previous reports and databases such as CIMIS. Cropping patterns will be used to further refine evapotranspiration estimates. The initial depth to water and Darcian flow will be the primary controlling processes for estimating changes in groundwater elevations due to recharge operations and scenario feasibility. Groundwater flow out of the water-balance models will be based on estimated representative horizontal hydraulic gradients for the specific area.

Sensitivity analyses will be performed by varying model inputs, such as hydraulic properties and evapotranspiration.

Time of travel for the recharged water will be estimated based on Darcy's law and representative regional hydraulic gradients. Contour maps will be produced that indicate specific time horizons, to assist with planning for recovery of the recharged water via new or existing wells.

Deliverable: The results of this task will first be presented to OID and CCWD. A draft report section documenting the in-lieu and direct recharge feasibility analysis will then be prepared and provided electronically for review. This report section will be used to identify infrastructure in Task 6. The results will also be presented as part of the briefings discussed in Task 2. Model files and spreadsheets will also be provided to CCWD and OID.

Task 6: Identification and Evaluation of Infrastructure for Conjunctive Use
Background and Task Goal: The location of and hydraulic capacity of OID's water delivery infrastructure to support this task will be obtained in Task 1 and used as part the screening in Task 4. The goal of this task is to link together the location and capacity of the existing delivery system for the potentially available surface water identified in Task 3 with the location of potential in-lieu or direct recharge conjunctive use sites identified in Tasks 4 and 5, respectively. This task will also propose, if necessary, improvements to and/or expansion of the existing surface water delivery and groundwater extraction system to realize the potential benefits of conjunctive use.

Existing Infrastructure: This portion of the task is to build on the existing surface water delivery (e.g., storage/conveyance systems, canals, aqueducts, etc.; location of diversion sites) information from Task 4 and identify infrastructure hydraulic capacity bottlenecks that prevent achieving the conjunctive use scenarios evaluated in Task 5. This task will also evaluate the OID monthly system operation data to understand when and where available system capacity exists for both surface water delivery and groundwater pumping.

Potential Future Infrastructure: The information on existing water delivery infrastructure will be matched with the potential recharge and extraction locations to identify areas where potential water delivery and groundwater pumping capacity improvements could be made to improve conjunctive use operations and eliminate the hydraulic bottlenecks. Potential future infrastructure such as canals, aqueducts, recharge impoundment areas, and extraction facilities (including sizes and preliminary operating assumptions) for the three direct recharge scenarios will be identified and feasibility-level cost estimates prepared. Potential facilities for monitoring of conjunctive use (e.g., water meters for delivery and pumping, water level measurement locations, etc.) will also be identified and potential additional facilities proposed as appropriate.

Deliverable: The initial results of this task will first be presented to OID and CCWD. A draft report section documenting the infrastructure analysis will be prepared and provided electronically for review. The results will also be presented as part of the briefings discussed in Task 2.

Task 7: Prepare Draft and Final Report
This task is to assemble the reports sections prepared for Tasks 1 through 6 and compile them to form a draft report and to prepare an executive summary. Comments on draft report sections will be addressed in the administrative draft report.

Deliverable:

- Compile Administrative Draft report sections documenting Tasks 1 through 6 and prepare Executive Summary for review by CCWD and OID staff (1 electronic pdf and 6 hard-copies)
- Prepare public draft Report for stakeholder briefings (1 electronic pdf)
- Prepare Final Report for approval by CCWD and OID (1 electronic pdf and 6 hard-copies)
- Submit approved Final Report to DWR (1 electronic pdf and 1 hard-copy)

Task 8: Project Management and Quality Assurance/Quality Control
This task includes both project management and Quality Assurance/Quality Control (QA/QC) that includes focused elements of cost and schedule control, and timely project status reporting for project management and internal technical reviews for QA/QC. The following tools and approaches will be used by Kennedy/Jenks on this project:

- Project Memorandum
- BST™ (business accounting software)
- Project Management Portal
- Monthly Invoices and Status Reports
- Timely Meetings and Telephone Conversations

Project Memorandum
The Project Memorandum is an essential document that establishes the baseline for cost and schedule control. It includes a project work plan, requirements, and constraints and outlines the project scope, budget, and schedule along with the QC Plan for distribution to the project team. Included in the Project Memorandum is a detailed fee estimate table (as found in Attachment 5 – Budget) that outlines the specific budgets for the team (and subconsultants), at a task and subtask level. This fee breakdown is used by the Kennedy/Jenks Project Manager to establish a baseline against which our labor costs and expenses are managed. Also included in the Project Memorandum is a project schedule in a Gantt chart format as found in Attachment 6 – Schedule and shows milestone meetings, workshops and draft/final deliverable dates. QC and client review periods and holidays are also shown. Showing the activities on a single schedule allows potential conflicts to be identified and avoided.

BST/Project Management Portal
Once the baseline cost and schedule is identified in the Project Memorandum, the information is entered into Kennedy/Jenks' business accounting software called BST™ which provides real-time information on project expenditures. Labor effort is entered on a daily basis and approved weekly, and the Project Manager has full access to this information through a "dashboard" called the Project Management Portal. This dashboard shows labor and expense activity in real-time, including the budget, effort to

date, remaining budget, percent complete (budget based), variances and unbilled labor and expenses. Access to these data allow the project manager to manage the work and control expenses to the project.

Monthly Invoices and Status Reports
On a monthly basis an invoice that covers the services provided, which documents progress on project expenditures. The Project Manager prepares the invoice in accordance with our professional services agreement and CCWD's agreement with DWR. A monthly status report, which formalizes work completed during the month and summarizes the progress on the project, will be prepared and submitted with each invoice. Invoices show both labor costs and direct expenses at a task and subtask level, and other backup information including each individual's hours and accompanying billing rates. The status report outlines the work performed during the current period, at a task and subtask level, and identifies any current or anticipated challenges or problems that require coordination or corrective action. Every third status report will be a quarterly report that will be sufficient for reporting to DWR. The invoice format will be customized to meet the requirements of a particular assignment or CCWD or DWR format request.

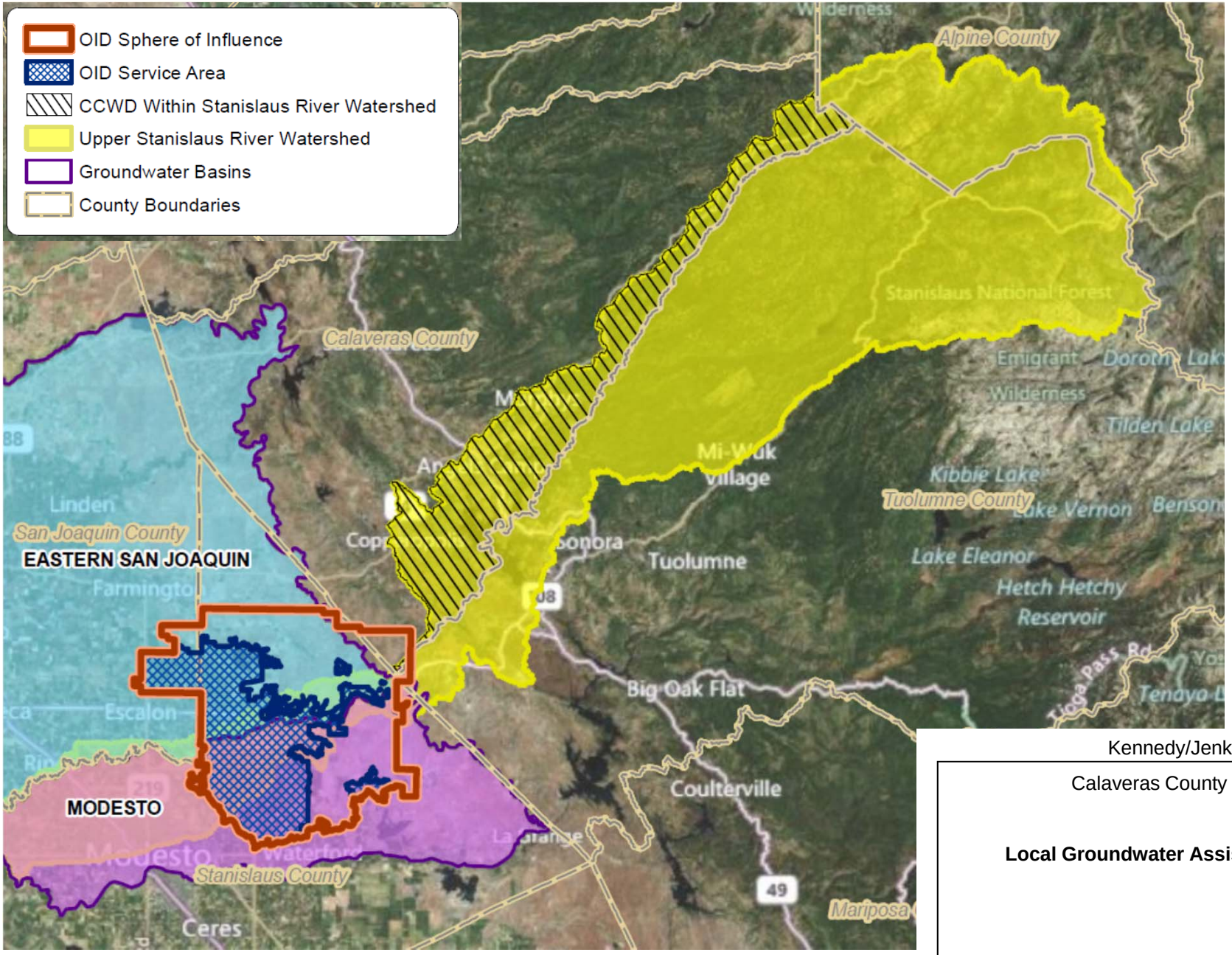
Timely Meetings and Communications
In addition to project management through cost and schedule control tools and procedures, timely and effective communications between the Project Manager, project team, CCWD, and OID will keep assignments on track and keep all parties informed on progress and issues requiring discussion and resolution. A schedule of conference calls/webcasts and progress meetings will be developed. The webcasts are a cost-efficient means of communicating complex information with a large group while minimizing travel costs. At a minimum, conference calls/meetings will occur on a monthly basis and more frequently at certain times during the project. We have assumed 12 conference calls/webcasts and 2 meetings. Invitees will include CCWD staff, OID staff, and key members of the consultant team in alignment with technical discussions of the project. These communications are where the unwritten expectations of performance are jointly established, where information and ideas are exchanged, and where bottlenecks or challenges are identified and worked around. Timely meetings and communications are essential element of cost and schedule control.

Quality Assurance/ Quality Control
QA/QC is an integral part of the project management and incorporates multi-disciplinary resources to provide independent internal reviews of the technical analyses, cost estimates, and reports before they are submitted to CCWD and OID. QA/QC for this project will include senior staff not directly involved in the day-to-day project work to provide independent peer review of work products. In addition, a Concept and Criteria Review Meeting will be held with senior staff early in the project to discuss the project approach, identify issues that might affect the project, and confirm the schedule for internal review of work products. This meeting provides the opportunity for senior staff to review the planning assumptions and technical approaches with the Project team.

<u>Deliverable:</u>

- Monthly invoices, and monthly and quarterly progress reports – one hard copy and one electronic copy

- Project team management and coordination.
- Status conference calls/meetings with CCWD Project Manager and other invitees – agendas and meeting notes - one hard copy and one electronic copy
- Quality Assurance/Quality Control review of work products and Concept and Criteria Review.



Kennedy/Jenks Consultants

Calaveras County Water District

Local Groundwater Assistance Grant
Study Area

July 2012

Figure No. 5-1

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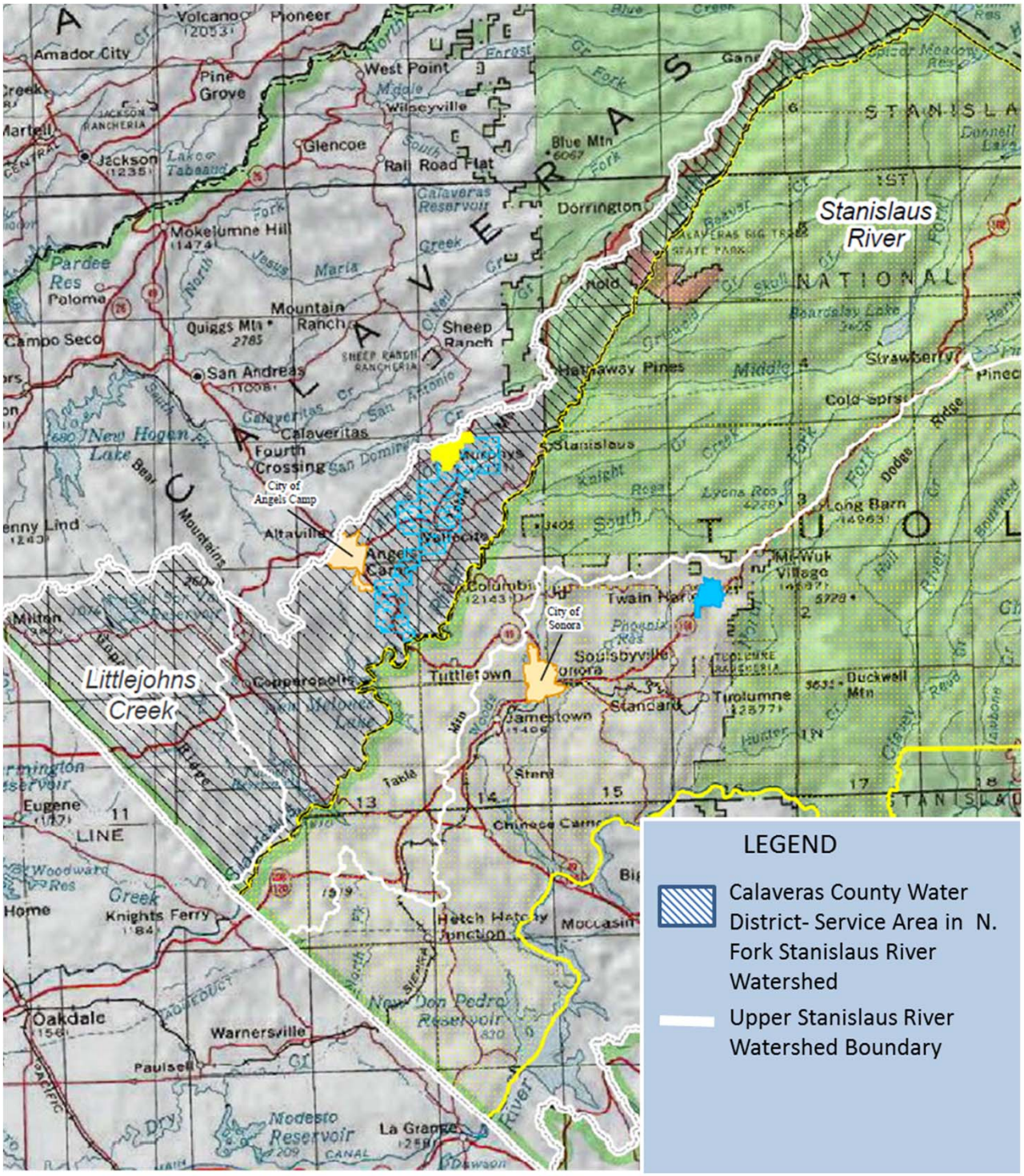

Kennedy/Jenks Consultants

Reference: Tuolumne-Stanislaus IRWM

Calaveras County Water District

Local Groundwater Assistance Grant
CCWD Service Area

July 2012

Figure No. 5-2

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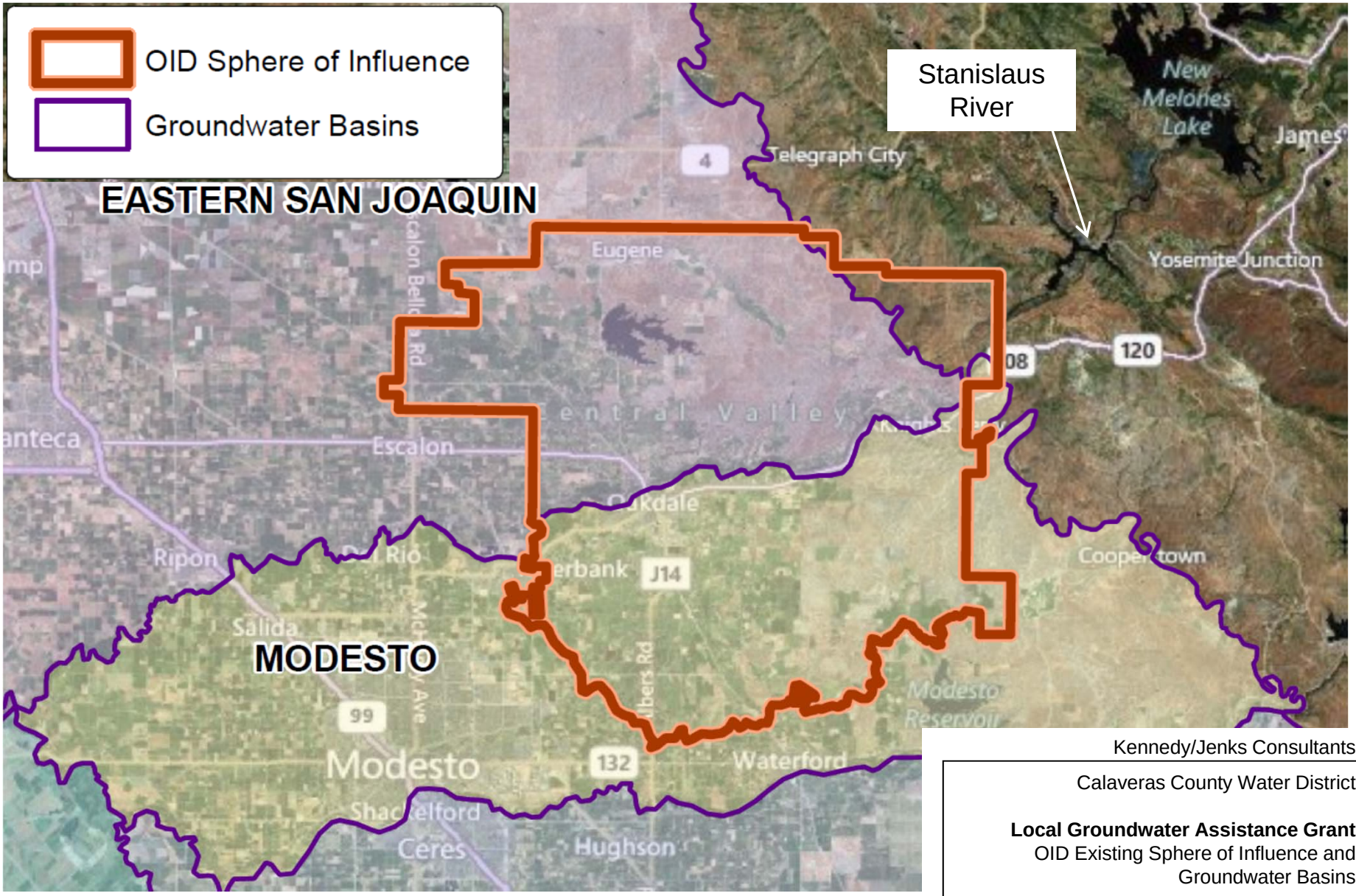

Kennedy/Jenks Consultants

Calaveras County Water District

Local Groundwater Assistance Grant
OID Existing Sphere of Influence and Groundwater Basins

July 2012

Figure No. 5-3

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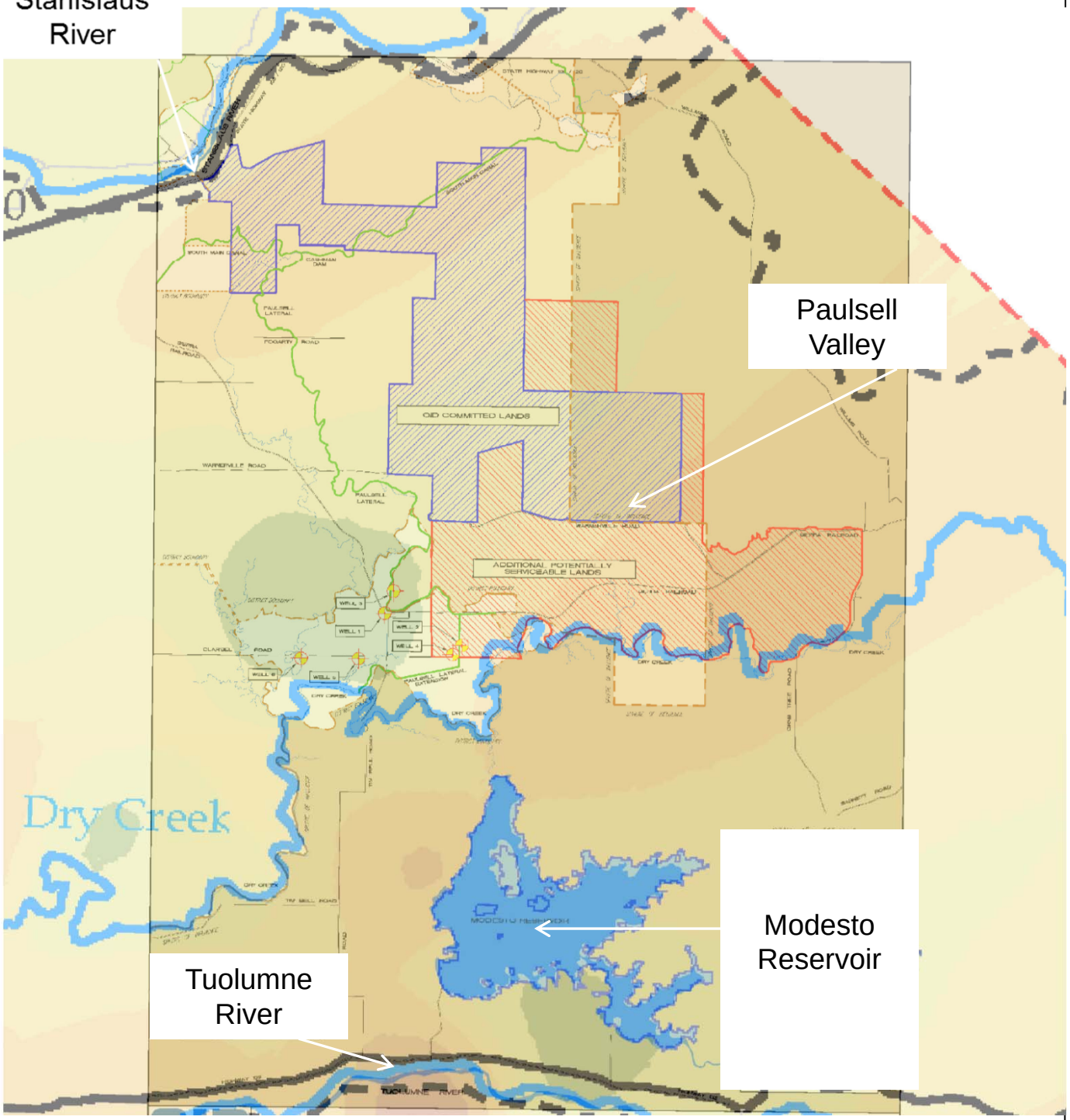

Kennedy/Jenks Consultants

References: OID and WRIME (2007)

Calaveras County Water District

Local Groundwater Assistance Grant
Paulsell Valley - Potential Conjunctive Use Area in OID Sphere of Influence

July 2012

Figure No. 5-4

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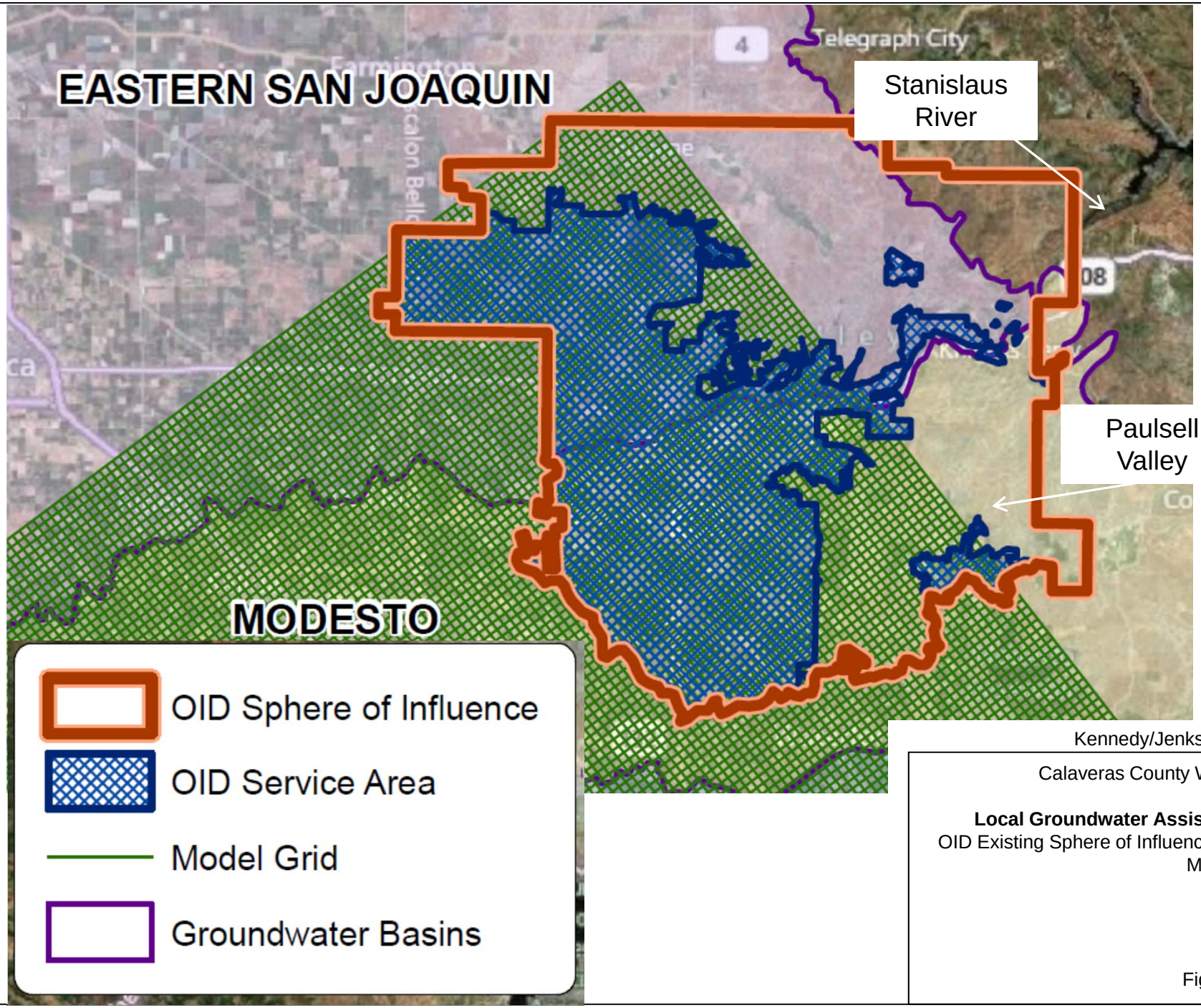

Kennedy/Jenks Consultants

Calaveras County Water District

Local Groundwater Assistance Grant
OID Existing Sphere of Influence and USGS Model Domain

July 2012

Figure No. 5-5

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OAKDALE IRRIGATION DISTRICT

May 7, 2012

Ms. Joone Lopez
General Manager
Calaveras County Water District
P.O. Box 846
San Andreas, CA 95249

Re: Application for Local Groundwater Assistance Grant Program
With Department of Water Resources

Dear Ms. Lopez:

The Oakdale Irrigation District (OID) hereby supports the Calaveras County Water District's (CCWD) application to the California Department of Water Resources (DWR) for the purpose of obtaining a grant under the Local Groundwater Assistance (LGA) Program in the amount up to $250,000.

The proposal by CCWD to evaluate the potential of a conjunctive use project within the Stanislaus River Watershed and Modesto Groundwater Sub basin should prove to be a valuable tool assisting local agencies in resources planning. Ever increasing demands for our limited water resources require that responsible water agencies make every attempt to maximize their existing supplies. Within the Stanislaus watershed, the need to investigate every opportunity to maximize the efficient use of those limited supplies should be pursued.

Furthermore, such a conjunctive use program, if feasible, could provide watershed-wide improvements to self-sufficiency for both the CCWD and OID and potentially other water users in the region. Within the context of increasing the efficient use of water in the region to provide greater drought protection and compensate for any influences of climate change, the nexus between surface water assets and groundwater storage is of even greater importance.

1205 East F Street / Oakdale, CA 95361 / (209) 847-0341 / Fax (209) 847-3468
www.oakdaleirrigation.com

The CCWD's upstream water supplies may potentially be coupled with a groundwater storage program in OID's downstream service area and improve the water supply reliability and resiliency to drought while maintaining reasonable water costs for both agencies. We believe that these potential benefits may be of value to the customers of OID and CCWD, the communities we serve and therefore, we urge the DWR to provide funding to the CCWD's LGA grant application.

Very truly yours,

OAKDALE IRRIGATION DISTRICT

Steve Knell, P.E.
General Manager

SK;lfp